



Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at <http://about.jstor.org/participate-jstor/individuals/early-journal-content>.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

Fig. 6. Spore. Fig. 7. *a*, scale from rootstock; *b*, scale from lower part of stipe; *c*, scale from rachis. Fig. 8. Magnified tomentum, showing jointed hairs.

Medford, Mass., May, 1881.

§ 58. On a Recent Determination of *Lepidodendron*.

By HERMAN L. FAIRCHILD.

The Annual Report of the State Geologist of New Jersey for 1879 contains an announcement by Prof. L. Lesquereux to the effect that *Lepidodendron* has been found in the Triassic rocks of that State. Such a discovery would be of the greatest importance to Palaeontology; and, being so opposed to all experience and expectation, would excite unusual interest. The passage from Prof. Lesquereux's letter to Prof. Cook, as it appears in the Report, page 26, reads as follows:

"The photographs are sufficient, if not for specific determination at least for positive reference of the specimens to *Lepidodendron*. Even I should say that the specimens represent *L. Weltheimianum*, Prest., as distinctly as a specific representation can be made upon a decorticated trunk of *Lepidodendron*. *L. Weltheimianum* is a leading species of the old red sandstone, found here, as in Europe, from the Sub-Carboniferous measures down to the Devonian, while until now we do not have any remains of *Lepidodendron* of any kind from the upper coal-measures (Permo-Carboniferous), or from higher up than the Pittsburg coal.

L. Weltheimianum is recorded only once from the true coal-measures; this by Eichwald, from the carboniferous sandstone of Russia. But European authors, among others Goeppert, doubt the identity of the Russian species with *L. Weltheimianum*, which is, moreover, extremely variable, and has been described already under about thirty different names."

I have had the opportunity of examining a series of photographs, duplicates of those sent Prof. Lesquereux, and with all proper deference to his authority, I should nevertheless say that his determination rests upon a very insufficient basis of facts.

The photographs show surfaces prominently marked with swelling areas separated by deeply furrowed lines. These areas are quite irregular in both size and shape. Some of them are regularly rhomboidal; but from this they vary to sub-linear. A quincunx arrangement is of course unavoidable with this shape. The surfaces shown probably represent the wood. But whether wood or cortex they certainly are entirely without the peculiar vascular markings which belong to the leaf-scars of *Lepidodendron*; and, indeed, they are destitute of any other definite characters.

In the first place, as regards the generic identification, it should be noted that, in the paragraph above quoted, Prof. Lesquereux admits the well known fact that *Lepidodendron* has never been found above the middle coal-measures. Now one might not wisely assert the impossibility of finding the genus in the Permian or even in the Trias. But many facts unite to render it extremely improbable. These facts are so familiar to many that it will be sufficient for the present purpose simply to mention a few of the most important.

We may note the almost universal extermination of genera at the close of the Carboniferous, marking the grand division between Palaeozoic and Mesozoic times. The types of the Mesozoic are more highly organized forms than those of the Carboniferous. The great physical and climatic changes which influenced the organic changes; and the immense lapse of time of which no record is found. To these more general facts, now add the striking and very important one that no *Lepidodendron* has ever been found in the upper coal-measures, where other vegetation of similar habits is abundantly preserved. Another point is, that *Sigillaria*, a plant of higher structure and affinities than *Lepidodendron*, and which continued to the end of the Carboniferous, has never afforded a specimen of later age. Moreover, the life of the Trias is comparatively well known, and plants in considerable abundance have been found in many Triassic areas in different parts of the world.

Although the objections to Triassic *Lepidodendron* are so evident and forcible, we nevertheless must admit that the improbability does not decide the question. But the evidence as to the nature of the fossils should be in the highest degree clear and incontrovertible to justify such a reference as the one under consideration, in opposition to all experience and probability.

Upon what facts or reasons, then, is this determination really based? Merely that the surface of the fossils is covered with irregular rhomboidal areas. These have of necessity a spiral arrangement, and, in this respect, but in this alone, resemble imperfectly preserved *Lepidodendron*. *They possess none of the characteristic inter-areal markings, the sure test of that genus.* If the fossil were found in the coal-measures one would be justified in supposing it to be a decorticated *Lepidodendron*. But some cycads have similar markings, and so have many conifers, as *Araucaria*. And why not Mesozoic conifers or cycads, the characteristic plants of that era? Or, as yet more probable than *Lepidodendron*, why not some unknown group of plants related to, or superficially resembling *Lepidodendron*?

That the fossils in question belong to some one of these groups is vastly more probable. And the reasons for the determination are certainly insufficient to sweep away all the weight of objection and bridge the great gap between the life of the Palaeozoic and Mesozoic.

Secondly, the specific determination is even less well founded. *L. Veltheimianum** is admitted to be characteristic of the Devonian and Sub-Carboniferous the world over, with not a single undoubted specimen from the coal-measures. Yet in the coal-measures it ought surely to be found if it had then existed. Not to find it in those deposits, filled with similar plants, which cover so wide and scattered areas, and represent such a duration of time, is to be almost certain of its extinction. The same reasoning applies to this which applies to the absence of all *Lepidodendron* from the upper coal-measures.

No one would claim that all Carboniferous species have been discovered. But that an arborescent lycopod could have a world-wide

*The old authorities credit the species to Sternberg and not to Presl, (I judge the spelling of the author's name in the quotation is a typographical error) and spell the specific name with V as initial.

distribution in the Sub-Carboniferous and there exist, up through all the coal-measures, under the most favorable conditions possible for preservation, without discovery is very improbable. There is no example of a plant existing through such a lapse of time and such geologic changes as intervene between the Devonian and the Trias. Even if the fossils were *Lepidodendron* at all, to identify them with the most ancient species would certainly seem erroneous.

It may be said that Prof. Lesquereux does not call the fossil *L. Veltheimianum* positively, only "as distinctly as a specific representation can be made upon a decorticated trunk." That is, however, pretty decided, for decorticated specimens have been his basis for new species. It would seem to have been better to regard these fossils, if *Lepidodendron* at all, as a new species, if for no other reason than their separation in time from the Lower Carboniferous species.

I should have been pleased to examine the fossils themselves; but I have seen other fossils from the same region which are so similar in appearance as to leave little doubt of their identity in kind, and they are not *Lepidodendron*. And we may confidently believe that the genus has not been discovered in rocks later than the Carboniferous.

NOTE: The above article was written a year ago, but its publication has been delayed in the hope of seeing the specimens, and so placing the matter beyond doubt. Recently, I have examined some fossils from the same locality and of precisely the same character as those in question; and my suggestion that the furrowed surface shown in the photographs probably represented the wood, is fully confirmed. Considerable of the bark is in position, and carbonized, but the exterior surface shows not the slightest trace of quincunx markings. The photographs represent the same condition, but before seeing these specimens I could not assert that the smooth external layer was carbonized cortex. This fact alone is sufficient to establish beyond question its distinctness from *Lepidodendron*.

§ 59. New Species of North American Fungi.

By J. B. ELLIS.

MARASMIUS PYRINUS.—Minute, about 1-4th of an inch high; pileus membranaceous, hemispheric, sometimes slightly umbilicate, sulcato-striate, pale at first, becoming chestnut-brown, .04—.045' diameter; stipe filiform, striate, brown, paler above; spores obovate, .00015' long. The outer coat of the pileus consists of a layer of ovate, echinulate, spore-like bodies, something like the spores of a *Scleroderma*.

On decaying pear-leaves lying on the ground. June, 1880. (Ellis, *N. Am. Fungi*, No. 401).

CORTICIUM ECHINOSPORUM.—Effused, indeterminate, hymenium sulphur-yellow, forming a thin, soft, sub-membranaceous stratum on the loosely-compacted threads of the subiculum, which form a scanty, evanescent, light-colored margin; basidia clavate, spicules rather long, bearing at their tips the globose, echinulate spores, which are in diameter .00015'—.0002'.

On wood and bark of pine, November.

ARTHROSPORIUM COMPOSITUM.—White, tufted or subconfluent; stems about 1-16th of an inch high, composed of compacted threads, whose free ends form lateral branches which bear fusiform, 3-septate conidia, .0013'—.0015' x .0002' in size.